

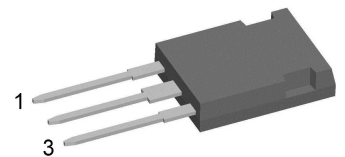
HiPerFRED

V_{RRM}	=	600 V
I_{FAV}	=	75 A
t_{rr}	=	35 ns

High Performance Fast Recovery Diode
 Low Loss and Soft Recovery
 Single Diode

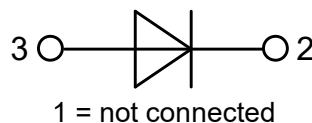
Part number

DSEP75-06AR



Backside: isolated

 E72873



Features / Advantages:

- Planar passivated chips
- Very low leakage current
- Very short recovery time
- Improved thermal behaviour
- Very low I_{rm} -values
- Very soft recovery behaviour
- Avalanche voltage rated for reliable operation
- Soft reverse recovery for low EMI/RFI
- Low I_{rm} reduces:
 - Power dissipation within the diode
 - Turn-on loss in the commutating switch

Applications:

- Antiparallel diode for high frequency switching devices
- Antisaturation diode
- Snubber diode
- Free wheeling diode
- Rectifiers in switch mode power supplies (SMPS)
- Uninterruptible power supplies (UPS)

Package: ISOPLUS247

- Isolation Voltage: 3600 V~
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0
- Soldering pins for PCB mounting
- Backside: DCB ceramic
- Reduced weight
- Advanced power cycling

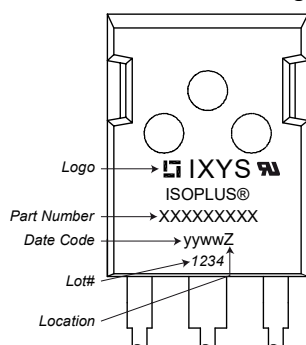
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Fast Diode				Ratings					
Symbol	Definition	Conditions		min.	typ.	max.	Unit		
V_{RSM}	<i>max. non-repetitive reverse blocking voltage</i>	$T_{VJ} = 25^{\circ}\text{C}$				600	V		
V_{RRM}	<i>max. repetitive reverse blocking voltage</i>	$T_{VJ} = 25^{\circ}\text{C}$				600	V		
I_R	<i>reverse current, drain current</i>	$V_R = 600\text{ V}$	$T_{VJ} = 25^{\circ}\text{C}$			1	mA		
		$V_R = 600\text{ V}$	$T_{VJ} = 150^{\circ}\text{C}$			4	mA		
V_F	<i>forward voltage drop</i>	$I_F = 75\text{ A}$	$T_{VJ} = 25^{\circ}\text{C}$			2,02	V		
		$I_F = 150\text{ A}$				2,33	V		
		$I_F = 75\text{ A}$	$T_{VJ} = 150^{\circ}\text{C}$			1,38	V		
		$I_F = 150\text{ A}$				1,71	V		
I_{FAV}	<i>average forward current</i>	$T_C = 115^{\circ}\text{C}$ rectangular d = 0.5	$T_{VJ} = 175^{\circ}\text{C}$			75	A		
V_{F0}	<i>threshold voltage</i>	} <i>for power loss calculation only</i>		$T_{VJ} = 175^{\circ}\text{C}$		0,93	V		
r_F	<i>slope resistance</i>					4,3	mΩ		
R_{thJC}	<i>thermal resistance junction to case</i>					0,5	K/W		
R_{thCH}	<i>thermal resistance case to heatsink</i>				0,25		K/W		
P_{tot}	<i>total power dissipation</i>	$T_C = 25^{\circ}\text{C}$				300	W		
I_{FSM}	<i>max. forward surge current</i>	t = 10 ms; (50 Hz), sine; $V_R = 0\text{ V}$		$T_{VJ} = 45^{\circ}\text{C}$		1,00	kA		
C_J	<i>junction capacitance</i>	$V_R = 600\text{ V}$ f = 1 MHz		$T_{VJ} = 25^{\circ}\text{C}$	30		pF		
I_{RM}	<i>max. reverse recovery current</i>	} $I_F = 100\text{ A}; V_R = 300\text{ V}$ -di _F /dt = 200 A/μs		$T_{VJ} = 25^{\circ}\text{C}$	6,5		A		
				$T_{VJ} = 100^{\circ}\text{C}$	11		A		
t_{rr}	<i>reverse recovery time</i>			$T_{VJ} = 25^{\circ}\text{C}$	35		ns		
				$T_{VJ} = 100^{\circ}\text{C}$	115		ns		

Package ISOPLUS247			Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit
I_{RMS}	RMS current	per terminal			70	A
T_{VJ}	virtual junction temperature		-55		175	°C
T_{op}	operation temperature		-55		150	°C
T_{stg}	storage temperature		-55		150	°C
Weight				6		g
F_c	mounting force with clip		20		120	N
$d_{Spp/App}$	creepage distance on surface striking distance through air	terminal to terminal	2,7			mm
$d_{Spb/Apb}$		terminal to backside	4,1			mm
V_{ISOL}	isolation voltage	t = 1 second	3600			V
		t = 1 minute	3000			V

Product Marking

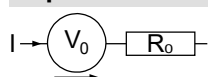


Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DSEP75-06AR	DSEP75-06AR	Tube	30	502595

Equivalent Circuits for Simulation

* on die level

$T_{VJ} = 175^{\circ}\text{C}$



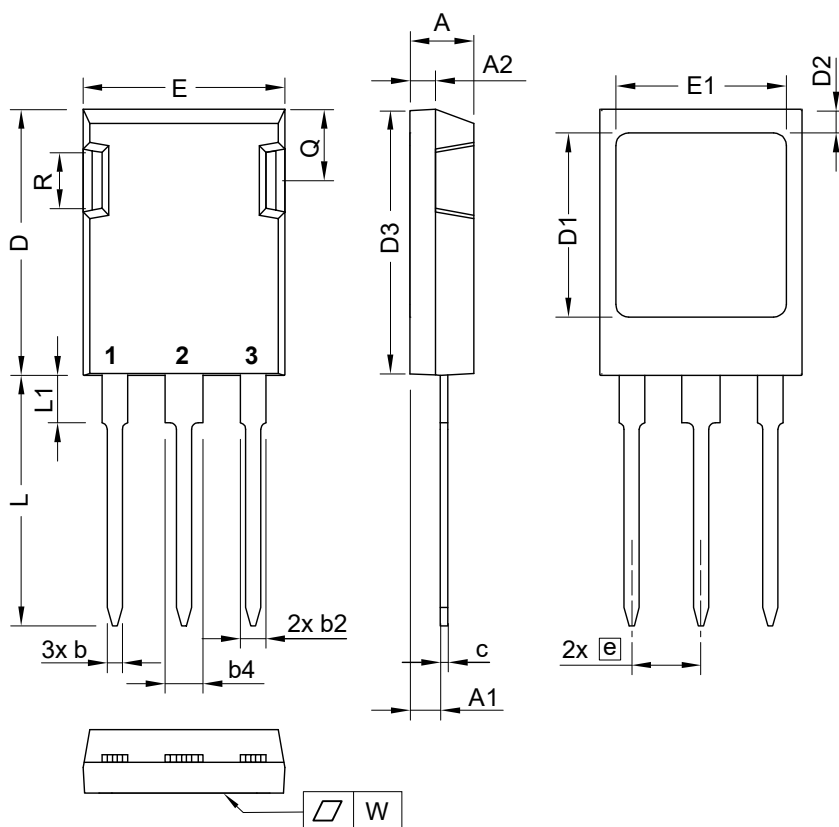
Fast Diode

$V_{0 \max}$ threshold voltage 0,93

V

$R_{0 \max}$ slope resistance * 1,7

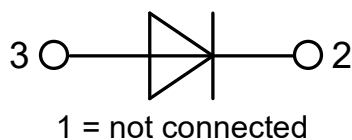
mΩ

Outlines ISOPLUS247


Dim.	Millimeter		Inches	
	min	max	min	max
A	4.83	5.21	0.190	0.205
A1	2.29	2.54	0.090	0.100
A2	1.91	2.16	0.075	0.085
b	1.14	1.40	0.045	0.055
b2	1.91	2.20	0.075	0.087
b4	2.92	3.24	0.115	0.128
c	0.61	0.83	0.024	0.033
D	20.80	21.34	0.819	0.840
D1	15.75	16.26	0.620	0.640
D2	1.65	2.15	0.065	0.085
D3	20.30	20.70	0.799	0.815
E	15.75	16.13	0.620	0.635
E1	13.21	13.72	0.520	0.540
e	5.45 BSC		0.215 BSC	
L	19.81	20.60	0.780	0.811
L1	3.81	4.38	0.150	0.172
Q	5.59	6.20	0.220	0.244
R	4.25	5.50	0.167	0.217
W	-	0.10	-	0.004

Die konvexe Form des Substrates ist typ. < 0.04 mm über der Kunststoffoberfläche der Bauteilunterseite
 The convex bow of substrate is typ. < 0.04 mm over plastic surface level of device bottom side

Die Gehäuseabmessungen entsprechen dem Typ TO-247 AD gemäß JEDEC außer Schraubloch und L_{max} .
 This drawing will meet all dimensions requirement of JEDEC outline TO-247 AD except screw hole and except L_{max} .



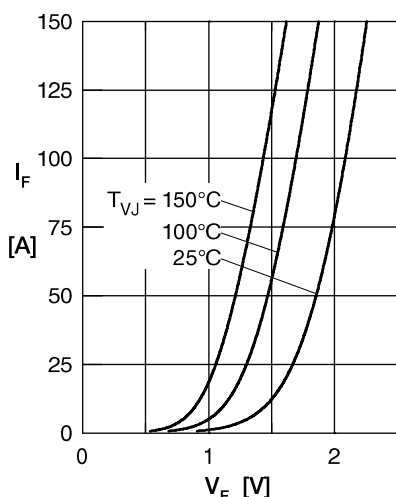
Fast Diode


Fig. 1 Forward current I_F versus V_F

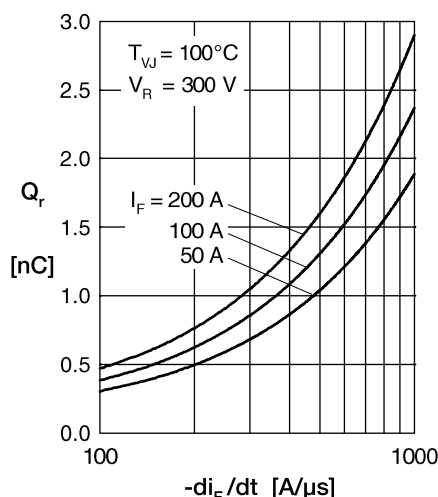


Fig. 2 Typ. reverse recov. charge Q_r versus $-di_F/dt$

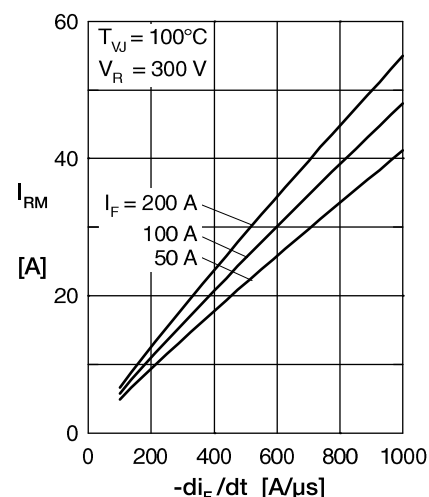


Fig. 3 Typ. peak reverse current I_{RM} versus $-di_F/dt$

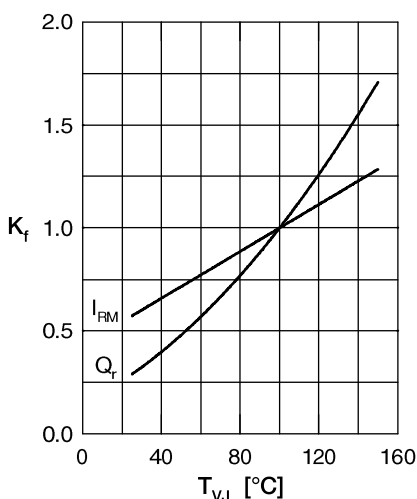


Fig. 4 Typ. dynamic parameters Q_r , I_{RM} versus T_{VJ}

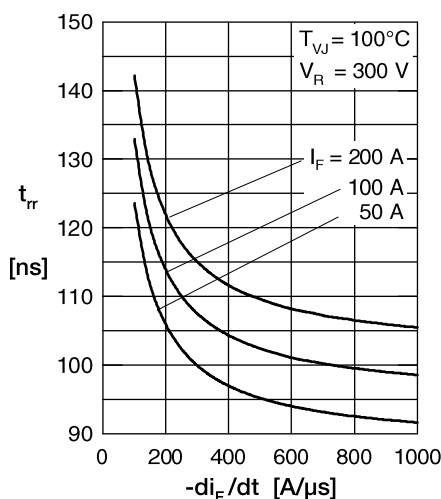


Fig. 5 Typ. recovery time t_{rr} versus $-di_F/dt$

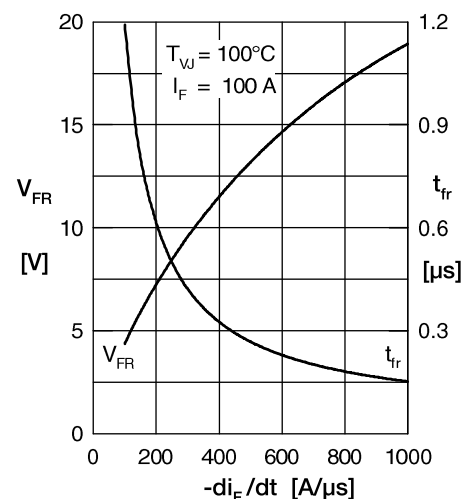


Fig. 6 Typ. peak forward voltage V_{FR} and t_{fr} versus di_F/dt

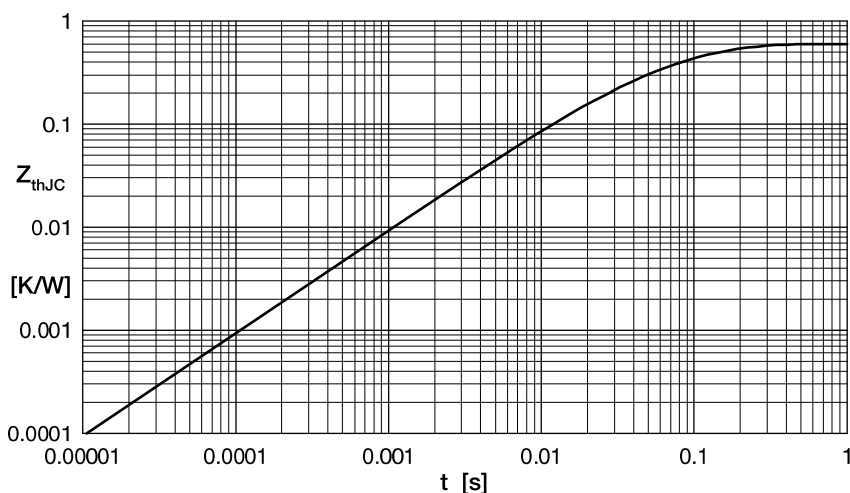


Fig. 7 Transient thermal resistance junction to case

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.212	0.0055
2	0.248	0.0092
3	0.063	0.0007
4	0.077	0.0391